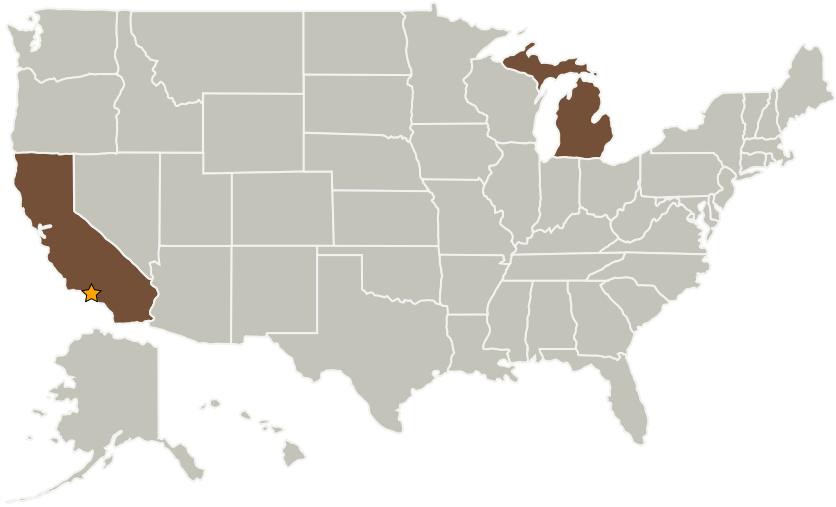
A Network of Multi-band Sensors for Radar Design, Deployment, and Diagnostics, Phase I

Completed Technology Project (2004 - 2004)

Project Introduction

Limitations on the design, monitoring and diagnosis of complex microwave systems due to insufficient models, the reality of imperfect physical conditions, and the reliance on trial-and-error iteration for system improvement serve to increase the time and costs of radar development. While microwave characterization is traditionally the realm of conventional, port-based measurements, the proposed concept suggests an alternative: the development of a novel network of electro-optic sensors that probe the near-field amplitude and phase of microwave signals at strategic locations within prototype or field-deployed radar systems. Such a sensor network, which would rely on optically-coupled, non-conductive, ultrawideband probes, would provide an unprecedented combination of negligible invasiveness, freedom from electrical interference, and the ability to capture signal information at frequencies from UHF to W-band. It would impact the development of virtually the entire range of technologies relevant to active microwave earth-science instruments. The proposed program will thus lead to the development of an instrument that can aid in areas such as deployment, calibration, and phase correction in large arrays, as well as in the identification of sources of electromagnetic-interference signals and the isolation of faults and failures.

Primary U.S. Work Locations and Key Partners



A Network of Multi-band Sensors for Radar Design, Deployment, and Diagnostics, Phase I

Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

A Network of Multi-band Sensors for Radar Design, Deployment, and Diagnostics, Phase I

Completed Technology Project (2004 - 2004)

Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Opteos, Inc.	Supporting Organization	Industry	Ann Arbor, Michigan

Primary U.S. Work Locations	
California	Michigan

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Kyoung Yang

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.4 Microwave, Millimeter-, and Submillimeter-Waves